What is claimed is:

1. An full-duplex optical communication system comprising:

a transmitter for transmitting a linearly polarized electromagnetic beam to an object;

a first quarter-wave plate for converting the linearly polarized beam into a circularly polarized beam;

a signal collection apparatus for directing the beam to the object and collecting the beam returned from the object;

a retro-modulator for directing the beam incident on the object back to said signal collection apparatus and for assigning left-handed and right-handed circular polarizations to the returned beam according to binary data bit information;

an aperture sharing element for separating the transmitted and returned electromagnetic beams;

a second quarter-wave plate for converting the left and right-handed circularly polarized beams into two orthogonally polarized beams respectively; and

at least one beam splitter for separating the two orthogonally polarized beams.

2. The system of claim 1 wherein said transmitter comprises a diode laser.

3. The system of claim 1 wherein said aperture sharing element comprises a mirror with an opening defined therein.

4. The system of claim 1 wherein said retro-modulator comprises a liquid crystal retro-modulator.

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5. The system of claim 1 wherein said at least one beam splitter comprises:

a first beam splitter for sending less than 1 percent of the returned beam from said aperture sharing element to a first FADOF and the remaining portion of the returned beam to said second quarter-wave plate; and

a second polarizing beam splitter for separating the two orthogonally polarized beams.

6. The system of claim 5 further comprising:

a second FADOF for receiving one of the orthogonally polarized beams from said second polarizing beam splitter;

a third FADOF for receiving the other of the orthogonally polarized beams from said second polarizing beam splitter; and

means for subtracting the orthogonally polarized beams.

7. The system of claim 1 wherein said system is capable of achieving a data rate of up to 10 kbps with a signal-to-noise-ratio greater than 2,100.

8. The system of claim 1 wherein said transmitter transmits a beam having a signal power less than or equal to 0.2 watts.

9. A method of full-duplex electro-magnetic communication, the method comprising selecting a pair of data modulation formats for the forward and return data links respectively such that the forward data electro-magnetic beam also serves a carrier for the return data.

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10. The method of claim 9 further comprising the steps of:

transmitting a linearly polarized electromagnetic beam to an object;

converting the linearly polarized beam into a circularly polarized beam;

directing the beam to the object and collecting the beam returned from the object;

assigning left-handed and right-handed circular polarizations to the beam incident on the object according to binary data bit information;

separating the transmitted and returned electromagnetic beams;

converting the left and right-handed circularly polarized beams into two orthogonally polarized beams respectively; and

separating the two orthogonally polarized beams.

11. The method of claim 9 wherein the step of transmitting comprises transmitting with a diode laser.

12. The method of claim 9 wherein the step of separating the transmitted and returned electromagnetic beams comprises separating with an aperture sharing element comprising a mirror with an opening defined therein, through which the transmitted and returned beams pass.

13. The method of claim 9 wherein the step of assigning left-handed and right-handed circular polarizations to the beam incident on the object according to binary data bit information comprises flipping the incident right-hand polarized beam into a left-hand polarized beam to represent a first binary state and leaving the incident right-hand polarized beam unchanged for the second binary state.

14. The method of claim 9 wherein the step of separating the transmitted and returned electromagnetic beams further comprises sending less than 1 percent of the returned beam to a first FADOF and the remaining portion of the returned beam to a second quarter-wave plate to be converted into the two orthoganally polarized beams.

15. The method of claim 14 wherein the step of separating the two orthogonally polarized beams comprises:

receiving one of the orthogonally polarized beams at a second FADOF;

receiving the other of the orthogonally polarized beams with a third FADOF; and

subtracting the orthogonally polarized beams received by each of the FADOFs.

16. The method of claim 9 further comprising the step of achieving a data rate of up to 10 kbps with a signal-to-noise-ratio greater than 2,100 during the optical communication.

17. The method of claim 9 wherein the step of transmitting a linearly polarized electromagnetic beam to an object comprises transmitting a beam having a signal power less than or equal to 0.2 watts.

18. A method of encoding optical information, the method comprising the step of assigning right-hand and left-hand circular polarizations to represent binary states.